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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,679	12/17/2003	Hideko Inoue	740756-2689	4095

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EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/736,679

Applicant(s)

INOUE ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2005 and 20 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 11-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 11-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. This Office action is in response to applicant's amendment filed July 14, 2005, which amends the specification and claims 1 and 3, cancels claims 4-10, and adds claims 11-22.

Claims 1-3 and 11-22 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. This Office action is also in response to the certified translation filed September 20, 2005. Based on the first page of the translated document, the translation is a translation of applicant's foreign priority application JP 2002-368990. However, the verification of translation signed by the translator indicates that the translation is a translation of the present application rather than the foreign priority application.

3. The objection to claim 10 under 37 CFR 1.75(c) as set forth in the Office action mailed April 14, 2005 is rendered moot by claim cancellation.

All rejections under 35 U.S.C. 102(b) as set forth in the April 14<sup>th</sup> action are overcome by applicant's amendment filed July 14, 2005.

4. Claims 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18 and 19 are drawn to the organometallic complex according to claim 17, but claim 17 is drawn to a light emitting device. Correction of the preamble of claims 18 and 19 is required.

5. Claims 1-3, 11-14 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Hamada et al. (US 2003/0194580 A1).

See the entire published application. In particular, see formula (16) on page 2, see paragraphs [0004], [0009]-[0015], [0021] and [0043], and see the claims. Hamada et al. disclose compounds of general formula 2 as defined in present claim 1, and further defined in present claims 2 and 3, wherein M represents iridium (an element of Group 9),  $n = 2$ , and L represents a monoanionic ligand of formula 3 or formula 5.

With respect to present claims 11-14 and 16, Hamada's compounds are disclosed for use as a light emitter in an electroluminescent (EL) device having the structure set forth in independent claim 11.

Further with respect to claim 14, as taught in paragraph [0004], EL devices are of interest for display devices that can support moving pictures and, as taught in paragraph [043], the EL devices may be used in portable devices.

Further with respect to claim 16, as taught in paragraph [0021], a hole transfer layer made of NPB may be included in the device structure. NPB is a low molecular weight material, and a layer made of NPB will inherently provide a hole injection function.

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6. Claims 1-3 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 2002/0034656 A1).

See the entire published application. In particular, see Fig. 11, Fig. 49, paragraphs [0052], [0058]-[0059], [0169]-[0173], [0177]-[0180] and [0183]. Thompson et al. suggest iridium compounds of general formula 2 as defined in present claim 1, and further defined in present claims 2 and 3.

With respect to present claims 11-16, Thompson et al. disclose the iridium compounds for use as a light emitter in an organic light emitting device (OLED) having the structure set forth in independent claim 11.

Further with respect to claim 14, the OLED may be incorporated into various articles as taught, e.g., in paragraph [0051].

Further with respect to claims 15 and 16, Thompson et al. teach that a hole-transporting layer may be included in the device structure, and may be made of known hole-transporting materials. The material represented by the formula in paragraph [0177] meets the limitations of a low molecular weight material as required by claim 16. Polyvinylcarbazoles, which are taught in paragraph [0180] as hole-transporting and are known in the art as suitable for hole transporting layers, meet the limitations of a polymer material as required by claim 15. A hole transporting layer made of the material represented by the formula in paragraph [0177] or made of a polyvinylcarbazole will inherently provide a hole injection function.

Thompson et al. disclose compounds of formula  $L_2MX$  where L may be a phenylimine, and X may be monoanionic ligand such as acetylacetonate (a ligand of present formula 3),

picolinate (a ligand of present formula 5), salicylanilide (a ligand similar to the ligand of present formula 7, differing only in having  $=NCH_3$  instead of  $=NH$ ), salicylaldehyde (a ligand of present formula 8), or 8-hydroxyquinolate (a ligand of present formula 9).

Thompson et al. do not disclose a specific example of a compound within the scope of the present claims, but such compounds are clearly suggested by Thompson's disclosure. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make compounds of formula  $L_2MX$  utilizing the L and X ligands taught by Thompson et al. in order to provide a variety of compounds suitable for use in an EL device as taught by the prior art. One of ordinary skill in the art at the time of the invention would have reasonably expected that iridium compounds of formula  $L_2MX$  having the L and X ligands taught by Thompson et al. would be luminescent materials and would be suitable for use in the luminescent layer of an organic EL device.

In the phenylimine formula shown in Thompson's Fig. 49, R corresponds to present  $R_1$ , and R' corresponds to present  $R_3$ - $R_6$ . Thompson et al. do not explicitly define R and R' for the phenylimine formula shown in Fig. 49 but, based on Thompson's disclosure as a whole and paragraphs [0169]-[0173] in particular, one of ordinary skill in the art at the time of the invention would have reasonably expected at least alkyl and aryl groups to be suitable substituents since Thompson et al. disclose alkyl and aryl substituents as suitable for other luminescent compounds within Thompson's disclosure. Further, the phenylimine formula shown in Thompson's Fig. 49 does not show a substituent at the position corresponding to present  $R_2$  but, based on paragraphs [0172]-[0173] in particular, one of ordinary skill in the art at the time of the invention would

have reasonably expected that phenylimine ligands having an alkyl or aryl group at this position instead of hydrogen could be used to make Thompson's compounds of formula  $L_2MX$ .

7. Claims 17-20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (US 2003/0194580 A1) as applied to claims 1-3, 11-14 and 16 above, and further in view of Yamazaki et al. (US 2001/0050373 A1) or Kamatani et al. (US 2003/0059646 A1).

Hamada et al. teach that EL devices are of interest for display devices that can support moving pictures and may be used in portable devices. Hamada et al. do not explicitly disclose the structure required for the device of independent claim 17 and claims dependent therefrom, which includes a thin film transistor (TFT), an interlayer insulating film over the TFT, and first electrode over the interlayer insulating film and electrically connected to the TFT.

A light emitting display device comprising an EL device electrically connected to a TFT through an insulating film was known in the art at the time of the invention.

Yamazaki et al. and Kamatani et al. disclose active matrix light emitting display devices comprising an EL device having an electrode electrically connected to a TFT through an interlayer insulating film. In Yamazaki's published application, see Fig. 15 and paragraphs [0126]-[0135], for example. In Kamatani's published application, see Fig. 6 and paragraphs [0201]-[0206], for example.

It would have been an obvious modification to one of ordinary skill in the art at the time of the invention to use Hamada's EL device to make an active matrix light emitting display

device of a structure known in the art such as the structure taught by Yamazaki et al. or Kamatani et al.

8. Claims 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 2002/0034656 A1) as applied to claims 1-3 and 11-16 above, and further in view of Yamazaki et al. (US 2001/0050373 A1) or Kamatani et al. (US 2003/0059646 A1).

Thompson et al. teach that the OLED may be incorporated into various articles as taught, e.g., in paragraph [0051]. Thompson et al. do not explicitly disclose the structure required for the device of independent claim 17 and claims dependent therefrom, which includes a thin film transistor (TFT), an interlayer insulating film over the TFT, and first electrode over the interlayer insulating film and electrically connected to the TFT.

A light emitting display device comprising an EL device electrically connected to a TFT through an insulating film was known in the art at the time of the invention.

Yamazaki et al. and Kamatani et al. disclose active matrix light emitting display devices comprising an EL device (OLED) having an electrode electrically connected to a TFT through an interlayer insulating film. In Yamazaki's published application, see Fig. 15 and paragraphs [0126]-[0135], for example. In Kamatani's published application, see Fig. 6 and paragraphs [0201]-[0206], for example.

It would have been an obvious modification to one of ordinary skill in the art at the time of the invention to use Thompson's OLED to make an active matrix light emitting display device of a structure known in the art such as the structure taught by Yamazaki et al. or Kamatani et al.



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9. Applicant's arguments filed July 14, 2005 have been fully considered but they are not persuasive.

With respect to the rejections based on Hamada et al., the rejections are maintained/made subject to clarification of the record regarding the identity of the translated document. As noted earlier in this action, the translator's verification of translation indicates that the translation is a translation of the present application rather than a translation of the foreign priority document.

With respect to the rejections based on Thompson et al., it is the examiner's position that Thompson's disclosure renders obvious the complex of present formula 2 in which any of  $R_1$ - $R_6$  is an alkyl or aryl group. To the extent that it may not have been clear from the rejection based on Thompson et al. as set forth in the previous action that the examiner considered alkyl or aryl groups at the position corresponding to present  $R_2$  to be obvious, the rejection is modified and this action is not made final. Regarding applicant's argument regarding the advantages attained by using a group such as an alkyl group at  $R_2$ , there is no objective evidence of record demonstrating superior/unexpected results provided by compounds having an alkyl or aryl group as  $R_2$  versus similar compounds in which  $R_2$  represents hydrogen.

10. Miscellaneous:

In the fifth line after the formula in claim 1, "may be" should be deleted.

In the second line of claims 16 and 22, --material-- should be inserted after "weight".

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11. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
October 03, 2005



MARIE YAMNITZKY  
PRIMARY EXAMINER

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